

Appl. No. : 10/692,090
Filed : October 23, 2003

AMENDMENTS TO THE SPECIFICATION

On page 1, first paragraph, please amend the Related Applications as follows:

--This application is a divisional of U.S. Patent Application No. 09/780,731, filed February 9, 2001 now United States Patent No. 6,676,635, which claims priority to the following prior foreign applications: Japanese Patent Application No. 2000-033520, filed February 10, 2000; Japanese Patent Application No. 2000-037176, filed February 15, 2000; Japanese Patent Application No. 2000-198358 filed June 30, 2000; and Japanese Patent Application No. 2001-026782 filed February 2, 2001.

In the SUMMARY OF THE INVENTION on pages 4-7, please remove the following paragraphs:

--The aspects of the present invention is as follows.

~~1. A syringe barrel comprising:~~

~~a projection on the rear surface of a flange;~~

~~the projection being so formed that when the flange is inserted in a flange insertion groove provided on a cylinder holder and mounted at use position, the tip of the projection is compressed, thereby, the flange is fitted into the flange insertion groove and fixed.~~

~~2. A cylinder holder comprising:~~

~~a flange insertion groove for holding the syringe barrel of above aspect 1; and~~

~~a concave portion formed on an inner wall surface of the flange insertion groove to be contacted with the rear surface of the flange of the syringe barrel;~~

~~whereby, the concave portion is engaged with the projection on the rear surface of the flange when the syringe barrel is mounted at use position.~~

~~3. A cylinder holder comprising:~~

~~a flange insertion groove for holding a syringe barrel; and~~

~~a projection on an inner wall surface of the flange insertion groove to be contacted with the rear surface of a flange of the syringe barrel; the projection being so formed that when the flange~~

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is inserted in the flange insertion groove and mounted at use position, the projection compresses the flange, thereby, the flange is fitted and fixed in the flange insertion groove.

4. — A syringe barrel comprising:

— a flange to be held by the flange insertion groove of the cylinder holder of above aspect 3;

— a concave portion formed on the rear surface of the flange;

whereby, the concave portion is engaged with the projection on the inner wall surface of the flange insertion groove when the syringe barrel is mounted at use position.

5. — A syringe barrel which can be mounted on a cylinder holder for fixing a syringe barrel by holding a flange of the syringe barrel by a flange insertion groove, and which can be used for an injection apparatus; the syringe barrel comprising:

— a guide which can be engaged with the cylinder holder and restrict the mounting direction of the syringe barrel.

6. — The syringe barrel according to Claim 5, wherein the guide is a projection having thickness of such size that the projection is not fitted in the flange insertion groove, and the engagement with a cylinder holder is accomplished by the relation of fitting of the flange in the groove and prevention of fitting of the guide in the groove; thereby rotation of the cylinder is inhibited when the syringe barrel is mounted on a cylinder holder.

7. — The syringe barrel according to above aspect 6, wherein the cylinder holder comprises a vertical part on the inner wall surface on the syringe barrel side, and the guide has a straight line part to be engaged with the vertical part.

8. — The syringe barrel according to above aspect 6, wherein the cylinder holder comprises two clamps; the two clamps being open before mounting the syringe barrel, and upper parts of the clamps being closed toward inner side to fix the flange when the syringe barrel is mounted on the cylinder holder.

9. — A syringe barrel which can be mounted on a cylinder holder for fixing the syringe barrel by holding a flange of the syringe barrel by a flange insertion groove, and which can be used for an injection apparatus; the syringe barrel comprising:

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~~_____ a concave portion which can be engaged with a positioning mechanism installed in the cylinder holder.~~

~~_____ 10. The syringe barrel according to above aspect 9, wherein the positioning mechanism is a latch pushed by a coil spring.~~

~~_____ 11. The syringe barrel according to above aspect 9, wherein the positioning mechanism is a blade spring having a pawl.~~

~~_____ 12. A cylinder holder having a positioning mechanism which can be fitted with a concave portion provided on a syringe barrel of any of above aspects 9 to 11.~~

~~_____ 13. A chemical solution injecting system, comprising:~~

~~_____ a syringe barrel of any of above aspects 5 to 11; and~~

~~_____ an injecting apparatus having a cylinder holder for fixing the syringe barrel by holding a flange of this syringe barrel by a flange insertion groove, a piston holder which holds a piston used together with this syringe barrel and can move relatively to the cylinder holder, and a driving mechanism which move this piston holder.~~

~~_____ 14. A syringe barrel, comprising: a reinforcing rib containing a concentric reinforcing part and a radial reinforcing part, provided on the rear surface of a flange.~~

~~_____ 15. A syringe barrel, comprising a double flange.~~

~~_____ 16. A syringe barrel, comprising a thick part provided at the base part on the front surface of a flange.~~

~~_____ 17. A syringe barrel, comprising a reinforcing part in the form of taper provided on the front surface of a flange.~~

~~_____ 18. A syringe barrel, comprising a flange where at least one of the front surface and the rear surface of the flange is roughened.~~

~~_____ 19. The syringe barrel according to above aspect 18, wherein the front surface of the flange is roughened.~~

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~~20. A cylinder holder comprising: a flange insertion groove for holding a syringe barrel; at least one of surfaces of the flange insertion groove to be contacted with the front surface and the rear surface of a flange of the syringe barrel being roughened.~~

~~21. The cylinder holder according to above aspect 20, wherein the surface to be contacted with the front surface of the flange of the syringe barrel is roughened.~~

~~22. A syringe piston in which the rear end surface of a syringe piston rod is roughened.~~

~~23. A piston holder in which a press surface to be contacted with the rear end surface of a syringe piston rod is roughened.~~

~~24. A pre-filled syringe, comprising:~~

~~a syringe using a syringe barrel of any of above aspects 1, 4, 5, 9, 14 to 18 and 20, or a syringe using a syringe piston of above aspect 22; and~~

~~a chemical solution filled in the syringe.~~

In the Brief Description of the Drawings, please amend the Figure legends as follows:

Brief Description of the Drawings

Fig. 1 is a view showing a syringe barrel mounted on a cylinder holder.

Fig. 2 is an enlarged view.

(a) is a view showing fitting of a flange with a flange insertion groove of a cylinder holder.

(b) is an enlarged view of a flange insertion groove of a cylinder holder.

(c) is an enlarged view of a flange.

Fig. 3(a) is a view showing a syringe barrel of Embodiment A-1. Figure 3(b) is an enlarged view of the B-part; Figure 3(c) is an x-x sectional view; Figure 3(d) is a y-y sectional view.

Fig. 4 is a view showing a Figs. 4(a) –(c) are views of the syringe barrel of Embodiment A-2. Figure 4(a) is a rear sideview; Figure 4(b) is an enlarged view of the C part; Figure 4 (c) is an x-x sectional view.

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~~Fig. 5 is a view showing a~~ **Figs. 5(a)-(d) are views of the** syringe barrel of Embodiment A-3. **Figure 5(a) is a rear side view; Figure 5(b) is an enlarged view of the D part; Figure 5(c) is an x-x sectional view; Figure 5(d) is a y-y sectional view.**

~~Fig. 6 is a view~~ **Figs. 6(a)-(b) are views** showing an example of a cylinder holder having a concave portion. **Figure 6(a) is the cylinder holder and Figure 6(b) is the cylinder holder with the syringe barrel mounted.**

~~Fig. 15 is a view~~ **Figures 15(a)-(c) are views** illustrating holding and positioning of a syringe by a cylinder holder (adaptor) of an automatic injecting apparatus shown in Figs. 11 and 13. **Figure 15(a) is a plan view of the mounting of the syringe; Figure 15(b) is a rear side view; and Figure 15(c) is a view showing the use position.**

~~Fig. 16 is an~~ **Figure 16(a)-(b) are** enlarged views of an adaptor. **Figure 16(a) is a plan view and Figure 16(b) is a rear side view.**

~~Fig. 38 is a view~~ **Figure 38(a)-(c) are views** showing one example of a syringe barrel. **Figure 38(a) is a section of the syringe barrel; Figure 38(b) is a side view from the B direction; and Figure 38(c) is a side view from the C direction.**

~~Fig. 39 is a view~~ **Figures 39(a)-(c) are views** showing one example of a cylinder holder (adaptor). **Figure 39(a) is a top view; Figure 39(b) is a side view; and Figure 39(c) is an enlarged view of an x-x section.**